| Notice of Allowability | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/675,286 | ESCOBAR ET AL. | |
| | Examiner | Art Unit | |
| | Douglas N Washburn | 2863 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--***

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *oath filed 20 January 2004*.

2. ☒ The allowed claim(s) is/are *1-15*.

3. ☒ The drawings filed on *30 September 2003* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

***Prior Art Cited***

1 Kulakowski et al. (US 5,566, 077) teaches a sensor arrangement for detecting the desired operating condition of an optical drive system and providing a response signal. A control system allows for several modes of operation depending on the measured temperature relative to several temperature thresholds. If a first temperature value is exceeded and a write or erase command (which includes a seek) has been initiated by the host processor, the command is initiated and executed but delays returning a "command completed" signal to the host processor until the timer value has been reached. The same is true for a seek command followed by a write or erase command. In the alternative, the temperature sensors are polled to determine if the operation can proceed in place of the "idle" timer. In either implementation, the drive is allowed to cool without inhibiting the execution of read commands which are low heat generators. If a second operational temperature threshold has been exceeded and a read, seek, write, or erase command (which includes a seek) has been initiated, the microcode initiates and executes the command but delays returning the command complete signal to the host until the "idle" timer value expires. This allows the drive to cool after execution of read commands as well. Again, the operation of the host would not be affected as the drive would appear to be in the process of executing a command and busy. Kulakowski is silent regarding a means for setting a desired or anticipated temperature range. Kulakowski is silent regarding a means for changing a mode of operation of a hard disk drive, having two modes of operation, from a first mode to a second mode, where the first mode generates more or less heat, upon determining a temperature exceeds a threshold.

Flinsbaugh et al. (US 6,088,662) teaches a temperature sensing system for use in a computer disc drive. A system wherein the temperatures occurring in a computer hard disc drive are measured to provide improved read performance by optimizing various temperature related read/write parameters occurring in the magnetic head and rotating disc drive. Further temperature measurement in a hard disc drive may improve seek performance by compensating for temperature-dependent gain changes that occur in the disc drive. Flinsbaugh is silent regarding a means for setting a desired or anticipated temperature range. Flinsbaugh is also silent regarding a means for changing a mode of operation of a hard disk drive, having two modes of operation, from a first mode to a second mode, where the first mode generates more or less heat, upon determining a temperature exceeds a threshold.

Suzuki et al. (US 6,134, 667) teaches assigning a fan rotation start threshold temperature and a stop fan rotation threshold temperature to a temperature sensor. A power supply controller compares temperatures detected by temperature sensors with corresponding fan rotation start and stop temperatures. When a temperature detected by a given temperature sensor has reached the fan rotation start or stop temperature, the controller informs the CPU of that state using the system management interrupt. Suzuki is silent regarding a means for changing a mode of operation of a hard disk drive, having two modes of operation, from a first mode to a second mode, where the first mode generates more or less heat, upon determining a temperature exceeds a threshold.

Atkinson (US 6, 336, 080) teaches determining a temperature of a predetermined location in a computer, reading indirect inputs of the computer, determining desired states of cooling options based on the temperature and the indirect inputs, and placing the cooling options in desired states. To determine the desired states of the cooling options, an index is formed based on indirect inputs and the index indicates to which of a plurality of tables of desired states of the cooling options to refer. Desired states of cooling options are determined by adjusting the value of temperature input based on the indirect inputs. The desired states of the cooling options also are dependent on the adjusted value of the measured temperature. Atkinson is silent regarding a means for setting a desired or anticipated temperature range. Atkinson is further silent regarding a means for changing a mode of operation of a hard disk drive, having two modes of operation, from a first mode to a second mode, where the first mode generates more or less heat, upon determining a temperature exceeds a threshold.

Hamaguchi et al. (US 6, 515,817) teaches a magnetic disk drive wherein a disturbance compensation parameter is measured and recorded in advance in a non-volatile RAM. The magnetic disk drive has two modes of normal operation rotation speed, 4200 RPM and 3000 RPM, respectively. Preferably, the initial disturbance compensation parameter is measured for several different temperatures because the parameter is mostly influenced by the temperature. The magnetic disk drive has a function of automatically measuring a disturbance compensation parameter altered by several thermal conditions through a process wherein a group of a thermal range is referred to a disturbance compensation parameter table and data is read from this table. Hamaguchi is silent regarding a means for setting a desired or anticipated temperature range. Further, Hamaguchi is silent regarding a means for changing a mode of operation of a hard disk drive, having two modes of operation, from a first mode to a second mode, where the first mode generates more or less heat, upon determining a temperature exceeds a threshold.

Korbel et al. (US 6, 747, 838) teaches during drive operation temperature sensors are continuously sensing the temperature of a power integrated circuit to determine whether the circuit has reached temperature set points associated with the temperature sensors. First it is determined whether signals are indicating that temperature sensors have sensed $T_{max}$. If $T_{max}$ is sensed, the microprocessor system either turns off the power transistors in voice coil motor, or powers down the drive in a desired mode. However, if, $T_{max}$ has not been sensed, the algorithm determines whether any of anticipatory set points have been reached. If signals indicate that none of the anticipatory set points have been reached, the algorithm simply allows the microprocessor to control voice coil motor according to the high performance power control mode implementing a seek profile. Korbel is silent regarding a means for setting a desired or anticipated temperature range. Korbel further fails to teach a means for changing a mode of operation of a hard disk drive, having two modes of operation, from a first mode to a second mode, where the first mode generates more or less heat, upon determining a temperature exceeds a threshold.

***Allowable Subject Matter***

2 The following is an examiner's statement of reasons for allowance:

Claim 1 recites, in part, "means for, upon determining that a temperature inside the hard disk drive is below the desired temperature range, changing a mode of operation of the hard disk drive from a first mode of operation to a second mode of operation, wherein the first mode of operation generates less heat than the second mode of operation". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claims 2-5 depend from claim 1.

Claim 6 recites, in part, "means for, upon determining that a temperature inside the hard disk drive is below the desired temperature range, changing a mode of operation of the hard disk drive from a first mode of operation to a second mode of operation, wherein the first mode of operation generates less heat than the second mode of operation". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claims 7-10 depend from claim 6.

Claim 11 recites, in part, "means for, upon determining that a temperature inside the hard disk drive is below the desired temperature range, setting a mode of operation of the hard disk drive to a first mode of operation, wherein the first mode of operation generates more heat than a second mode of operation, until the desired temperature range is reached". This feature in combination with the remaining claimed structure avoids the prior art of record.

Claims 12-15 depend from claim 11.

It is these limitations, which are not found, taught or suggested in the prior art of record, and are recited in the claimed combination that makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

3 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas N Washburn whose telephone number is (571) 272-2284. The examiner can normally be reached on Monday through Thursday 6:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DNW

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